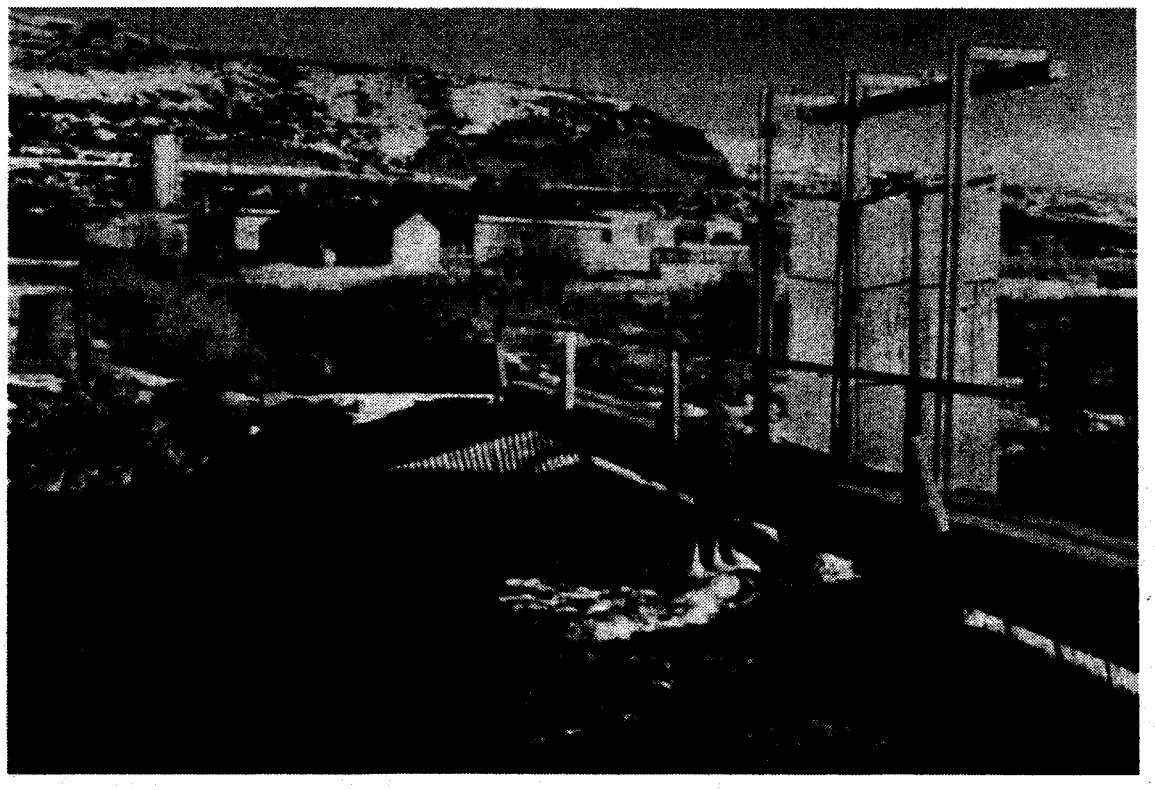
IDAHO FISH & GAME

Idaho Power

PAHSIMER01 HATCHERY

1986 Brood Year Report
. Spring and Summer Chinook Saknon



by

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ABSTRACT

A total of 6,518 spring chinook (2,824 males, 3,593 females, and 101 jacks) were trapped during 1986. In addition, 345 summer chinook (133 males, 175 females, and 37 jacks) were trapped. Three hundred seventy-nine female spring chinook were spawned yielding 1,543,015 eggs and 106 female summer chinook were spawned and 476,281 eggs collected.

One hundred summer chinook (40 females, 60 males) were released upstream of the weir to spawn naturally in the Pahsimeroi River. A temporary weir was installed on the Yankee Fork, and 1,505 adult spring chinook were stocked for a Shoshone-Bannock tribal fishery. In addition, 3,384 spring chinook were transported to Panther Creek for a general sport fishery.

The number of summer chinook smolts produced was 598,500, of which 294,000 were Pahsimeroi stock and 304,500 were South Fork stock. These fish were released from March 15 through March 20, 1988.

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INTRODUCTION

Pahsimeroi Hatchery is owned and funded by Idaho Power Company (IPC) and is operated by the Idaho Department of Fish and Game. The salmon and steelhead programs are mitigation for the IPC dams constructed on the Snake River in Hells Canyon. The hatchery is located near Ellis, Idaho, one mile upstream on the Pahsimeroi River, with the final rearing ponds located at a separate facility seven miles upstream on the Pahsimeroi.

OBJECTIVES

The objectives of the Pahsimeroi Hatchery are:

1. To rear 1 million summer chinook smolts for release into the Pahsimeroi River.

2. To trap and spawn summer chinook adults returning to the Pahsimeroi River.

WATER SUPPLY

Water for the hatchery is supplied by the Pahsimeroi River and varies in temperature from 32°F during the winter to 64°F in summer. The river water has a high organic load during winter but is quite clean during the summer months. In addition, the hatchery has spring water available for its egg incubation system. Its temperature varies from 52°F in the winter to 55°F in the summer, and it has a pH of 7.8.

HATCHERY FACILITIES

Located on the hatchery is a fish trap consisting of three concrete pens measuring 15 ft. x 75 ft. x 3.5 ft. deep. Adult fish are held in these pens until they are spawned. The trap has a series of ladders in the structure and a metal grate that keeps the fish from returning to the river. A 55 ft. long weir crosses the Pahsimeroi River to guide the arriving fish into the trap facility.

Near the trap facility lies a residence, two pumphouses, a 10,000-gal. water storage tank, a metal shop building, a cinder block office building, public rest rooms, an incubator room with capacity for 20 double stacks of Heath incubators, and a building with a two-bedroom dormitory and workshop. Four concrete raceways (4 ft. x 100 ft.) are used for early rearing of salmon and steelhead fry.

Two dirt rearing ponds (40 ft. x 300 ft.) are located seven miles above the trap at a separate facility. These are used to rear summer chinook smolts. Other facilities at the upper pond site include a residence, a small storage building, a feed bin for storing dry fish feed, and a walk-in freezer for storing frozen salmon feed.

SPRING CHINOOK TRAPPING

Spring chinook trapping began on May 20 and concluded on July 10. During this time, 6,518 adults (2,824 males, 3,593 females, and 101 jacks) were trapped (Figure 1). Length frequencies were taken on all returning adults and are reported in Figures 2 and 3. The fish were not injected with Erythromycin Phosphate this year due to the number that were hauled for sport fishery. Prespawning mortality resulted in the loss of 340 females, 74 males, and 2 jacks, or 6.3% of the total number trapped. Kidney disease caused most of the prespawning mortality.

SALMON RELEASES FOR TRIBAL FISHERY

A weir was installed on the Yankee Fork above the town of Custer. The weir was a metal structure placed across the stream to prevent salmon from moving downstream. A total of 620 males, 869 females, and 16 jacks were transported during June, July, and August to this area and released for an Indian fishery. Members of the Shoshone-Bannock Tribes utilized this fishery for their traditional-style salmon fishing.

SALMON RELEASES FOR SPORT FISHING

During June and July, adult spring chinook were transported to Panther Creek to provide a sport fishery. A total of 1,373 males, 1,993 females, and 18 jacks were marked with an opercle punch and released from Musgrove Creek down to Clear Creek. Fish and Game biologists estimated a harvest of 1,000 fish from this release. An interesting note is that 835 fish returned to the Pahsimeroi and were retrapped.

SPRING CHINOOK SPAWNING SUMMARY

Spawning of spring chinook started on August 29 and ended on September 22. A total of 379 females were spawned yielding 1,543,015 green eggs, an average of 4,071 eggs per female.

A total of 655,733 eyed eggs and 296,477 green eggs were shipped to Oregon's Lookingglass and Irrigon hatcheries, and 312,262 eyed eggs were shipped to the Sawtooth Hatchery.The first egg lot was hatched, and 65,104 swim-up fry were transferred to Sawtooth in late November.An 86.5% eye-up was attained for this brood year.

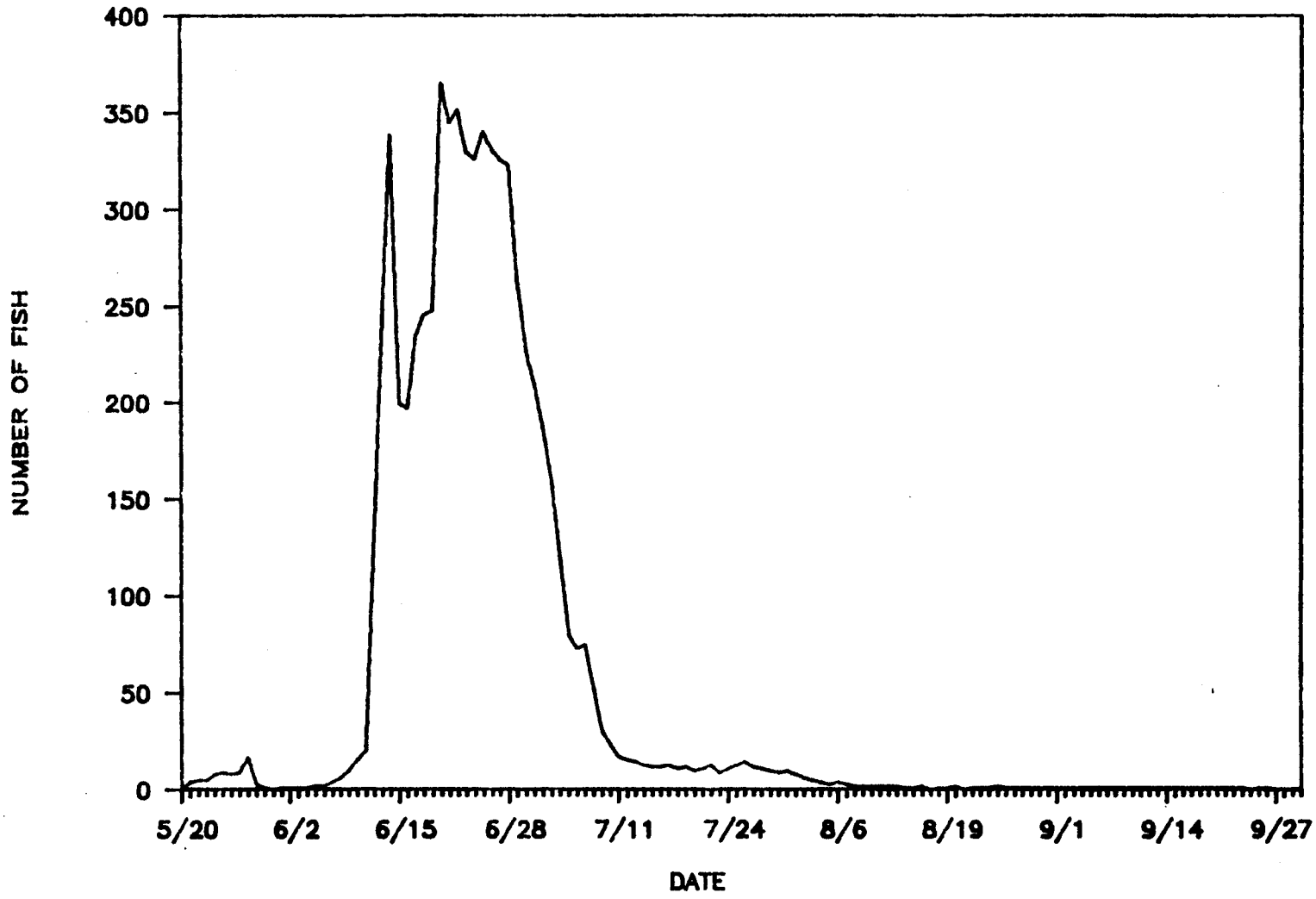

Figure 1. Run timing of adult chinook returning to Pahsimeroi, 1986.

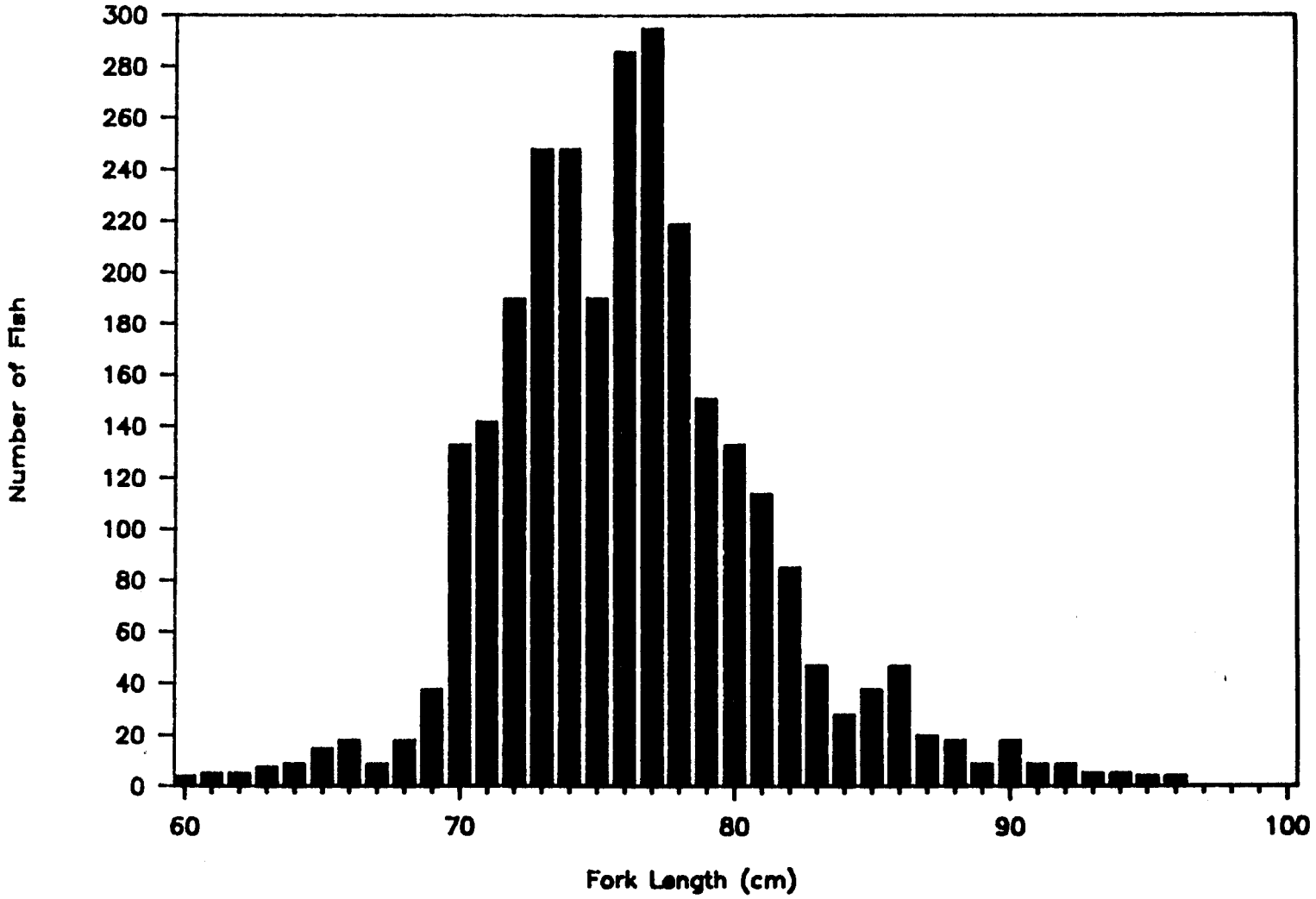

Figure 2. Length frequency distribution of adult male spring chinook, Pahsimeroi, 1987.

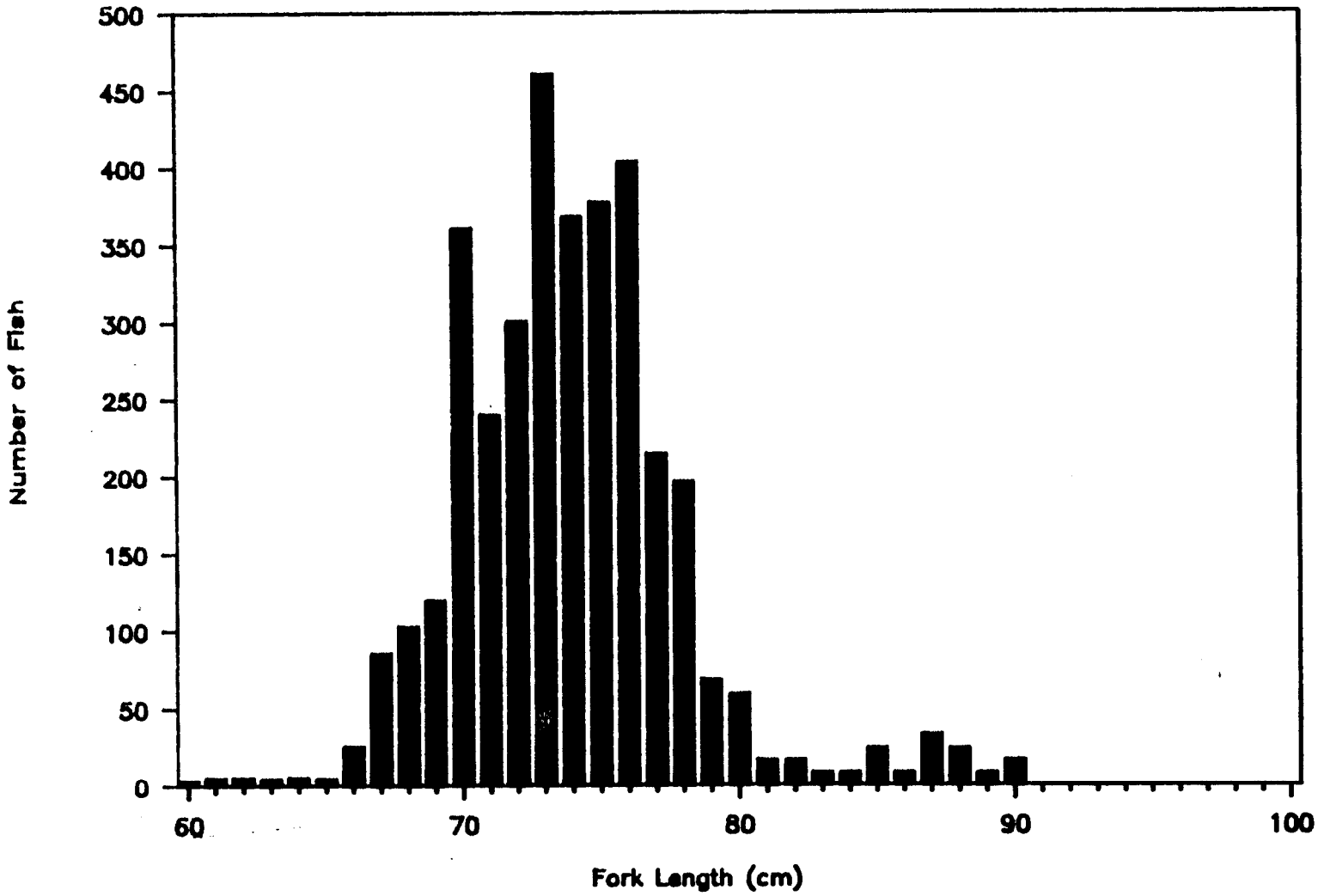

Figure 3. Length frequency distribution of adult female spring chinook, Pahsimeroi, 1987.

SUMMER CHINOOK TRAPPING

Trapping for summer chinook started on July 10 and concluded on September 30. A total of 345 adults (133 males, 175 females, and 37 jacks) were trapped during this period. Length frequencies were taken on all adults and are reported in Figures 4 and 5. A total of 8 males and 32 females (11.52) died prior to spawning. A total Of 40 females and 60 males were released upstream to spawn naturally in the Pahsimeroi River. Kidney disease was attributed to a majority of the mortalities.

SUMMER CHINOOK SPAWNING INFORMATION

Spawning of summer chinook started on August 29 and continued through October 7. A total of 106 females were spawned for 476,281 green eggs, and fecundity was 4,493 eggs per female. The average eye-up percentage was 90.9%.

SPAWNING TECHNIQUE

Females were sorted twice a week for ripeness. Ripe fish were killed by a blow to the head and bled by severing the caudal artery. Eggs from three females were pooled in a bucket containing sperm pooled from three males. The eggs were hand-stirred and allowed to sit for five minutes. A 100-ppm iodine solution (Argentyne) was added to the eggs and drained off to remove the sperm. The solution was again added to the eggs and allowed to sit for 30 minutes. Eggs were then rinsed and placed in water for 30 minutes. They were then measured into incubator trays at 100 ounces per tray.

Eggs were treated daily with a 1.667-ppm formalin solution to control fungal growth. After 21 days, the eyed eggs were shocked and floated in a salt brine solution to remove blank and dead eggs. Eyed eggs were remeasured using the displacement method and placed back into the incubators.

After the eggs were eyed-up and picked, the incubator water system was switched from spring water to the cooler river water. This was done to retard fry development and to attain programmed growth rates.

SOUTH FORK SUMMER CHINOOK EGGS

Two egg lots, totaling 374,041, were received from McCall Hatchery during early October. They were from the South Fork Salmon River summer chinook stock and are to be used to help rebuild the Pahsimeroi summer chinook run.

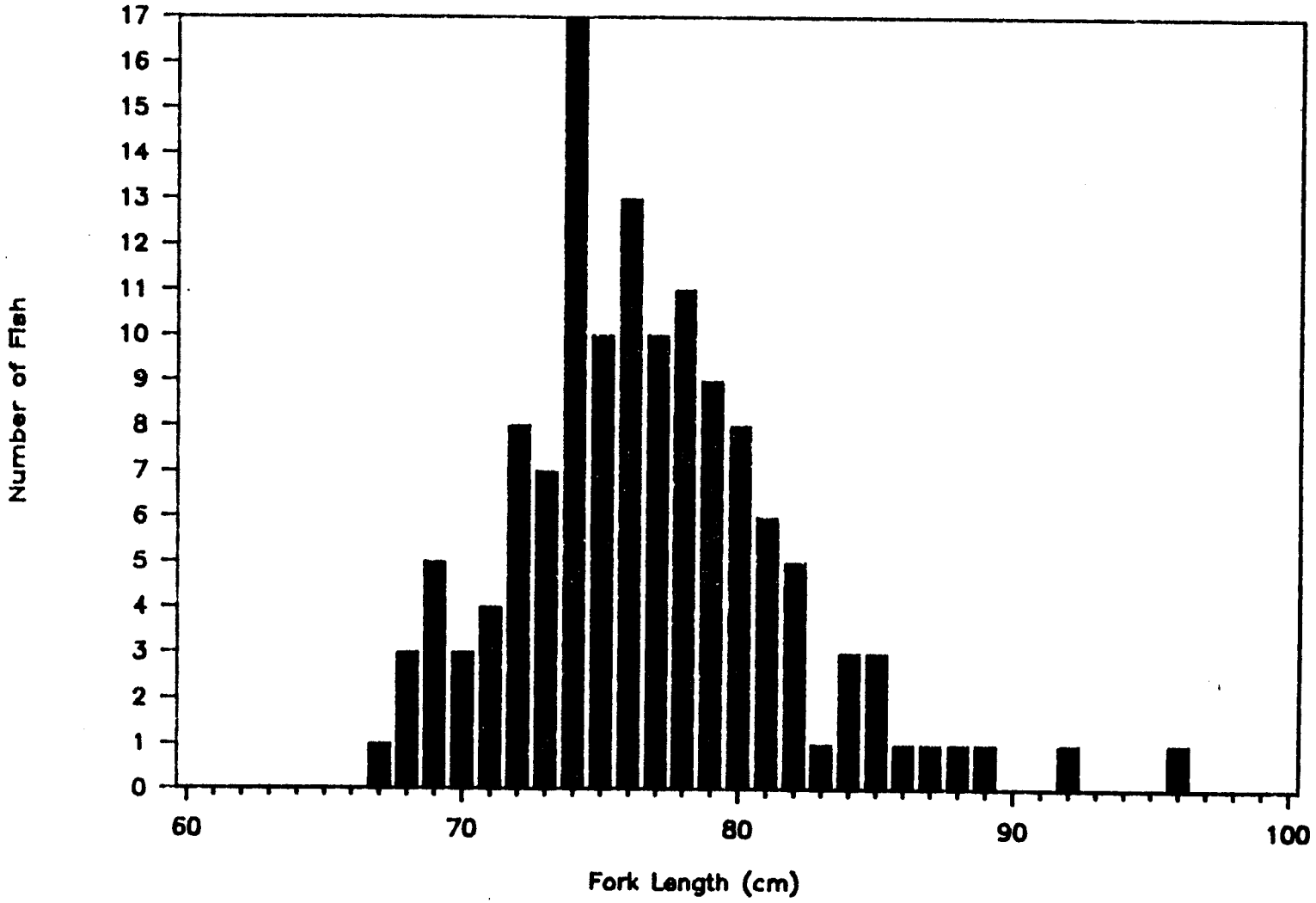

Figure 4. Length frequency distribution of adult male summer chinook, Pahsimeroi, 1987.

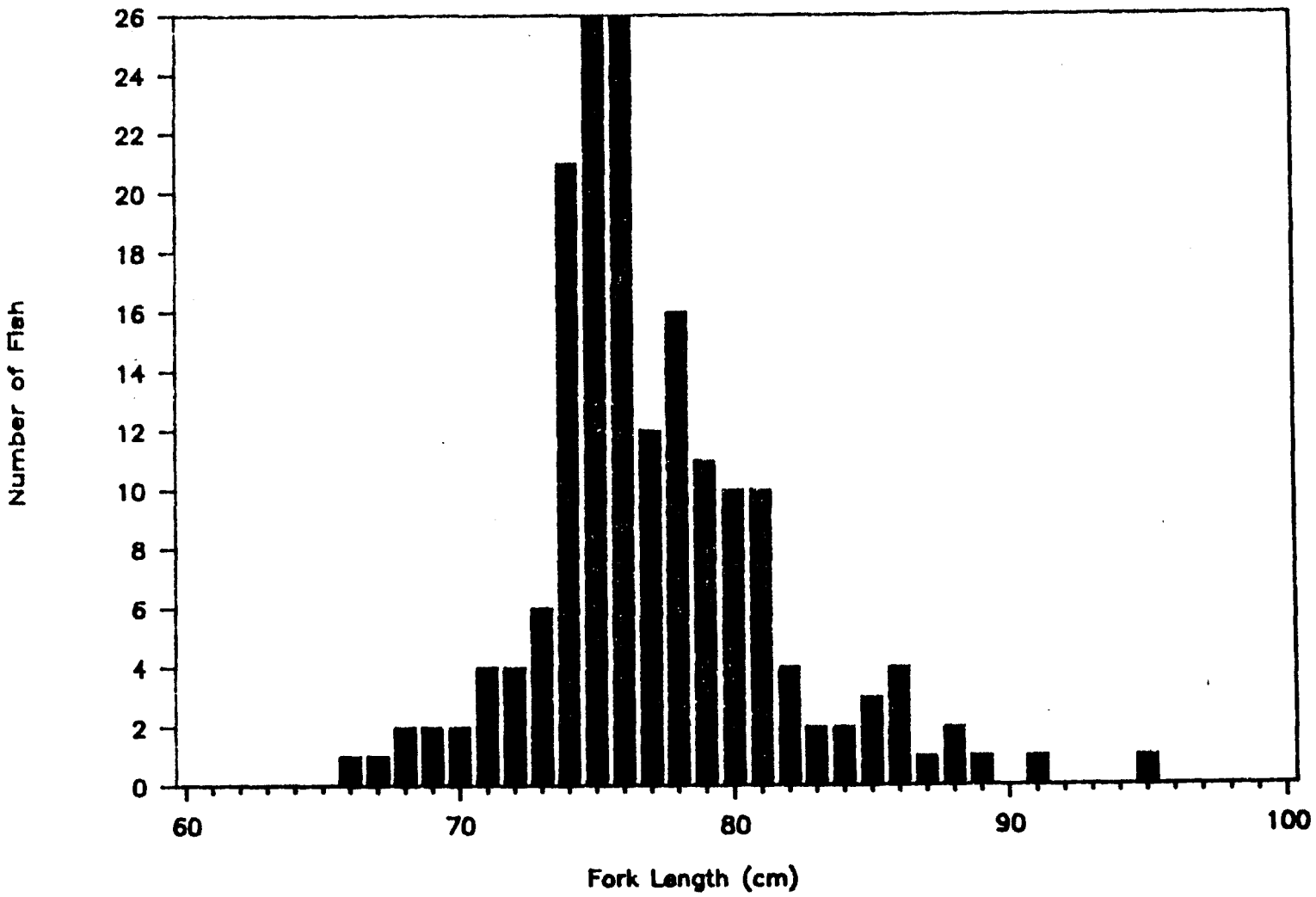

Figure 5. Length frequency distribution of adult female summer chinook, Pahsimeroi, 1987.

FISH PRODUCTION

Initial transfer of salmon fry into the raceways began during mid-December, while the bulk of the fry were moved during February and March. Initially, these fish were hand fed at the rate of 3% body weight but were reduced to 1.25% by November 1 using a hatchery constant of 6.5.

Both lots of summer chinook were transported to the upper rearing ponds during April. A total of 315,692 Pahsimeroi stock were transferred to Pond No. 1, while 327,056 South Fork stock were transferred to Pond No. 2.

Both lots of summer chinook smolts were released during March of 1988. The Pahsimeroi stock smolts totaled 294,000 (15.1 per lb., 19,468 lbs.). The South Fork stock totaled 304,500 (16.2 per lb., 18,798 lbs.).

All chinook were fed diets of Oregon moist pellets. The Pahsimeroi stock had a conversion rate of 1.67, while the South Fork stock had a conversion rate of 1.78.

FISH HEALTH

Whirling disease was diagnosed in the smolts prior to release. This was the first confirmed case to appear at Pahsimeroi. Only a small portion of the fish were affected, and no losses from this condition were observed. Only time will tell what effect this will have on the program.

HATCHERY IMPROVEMENTS

Several improvements were made at the hatchery this year. A new lawn area with a pole border was established, installation of 100 feet of 2-in. water line to the spring water pump for use during severe cold spells to prevent ice buildup on raceway screens, the residence at the upper ponds was painted, a new bridge was constructed at the upper facility, a visitor area was constructed at the trap site, and an insulated feed bin was built for the small raceways.

STAFFING

The hatchery is staffed with two permanent employees:a Hatchery Superintendent II and a Hatchery Superintendent I. Several temporaries are employed at various times of the year to help with trapping and spawning steelhead and salmon.

A P P E N D I C E S

Appendix 1. Length frequencies of adult spring and summer chinook salmon, 1986.

Fork length (cm)	Spring chinook		Spring chinook	
	Males	Females	Males	Females
60	4	4	0	0
61	5	6	0	0
62	5	6	0	0
63	8	5	0	0
64	9	6	0	0
65	15	5	0	0
66	18	26	0	1
67	9	86	1	1
68	18	103	3	2
69	38	120	5	2
70	133	361	3	2
71	142	240	4	4
72	190	301	8	4
73	248	461	7	6
74	248	369	17	21
75	190	378	10	26
76	286	404	13	26
77	295	215	10	12
78	219	197	11	16
79	151	69	9	11
80	133	60	8	10
81	114	17	6	10
82	85	17	5	4
83	47	9	1	2
84	28	9	3	2
85	38	25	3	3
86	47	9	1	4
87	20	34	1	1
88	18	25	1	2
89	9	9	1	1
90	18	17	0	0
91	9	0	0	1
92	9	0	1	0
93	5	0	0	0
94	5	0	0	0
95	4	0	0	1
96	4	0	1	0
97	0	0	0	0
98	0	0	0	0
99	0	0	0	0
100	0	0	0	0
TOTALS	2,82	3,59	133	175

Appendix 2. Return rates of spring and summer chinook at Pahsimeroi Hatchery.

Brood year	Release date	Smolts released	Returns 1-ocean	2-ocean	3-ocean	Total	Percent return
			Summer Chinook				
1968	1970	300,000	89	544	40	673	.22
1969	1971	250,000	40	486	9	535	.21
1970	1972	250,000	20	143	105	268	.11
1971	1973	347,000	3	17	32	52	.015
1972	1974	330,000	12	286	436	734	.22
1973	1975	114,000	53	115	*		
1974	1976	121,000	7	*	54		
1975	1977	235,000	*	10	4		
1976	1978	218,000	2	29	9	40	.018
1981	1983	13,700	13	72	30	115	.84
1982	1984	55,800	27	278	52	357	.64
1983	1985	209,150	37	409			
1984	1986	12,100	12				
1985	1987	258,600					
1986	1988	598,500					
			Spring Chinook				
1981	1983	437,300	97	1,568	398	2,063	.47
1982	1984	1,143,000	480	6,019	1,463	7,962	.70
1983	1985	178,800	101	677			
1984	1986	81,000	35				

* Trap not in operation during 1978.

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